


# COMPUTER NETWORKS LAB



SUBMITTED TO:

SIR SHOAIB

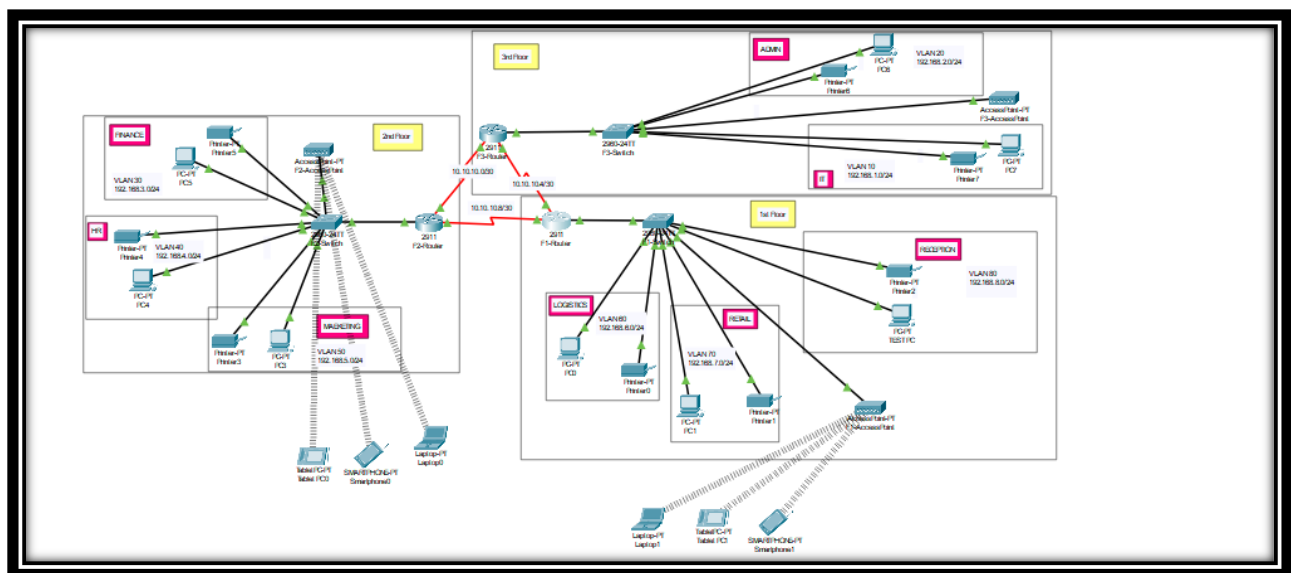
SUBMITTED BY:

TANZEELA ASGHAR  
(2021-BSE-032)

# “AIRPORT MANAGEMENT SYSTEM”

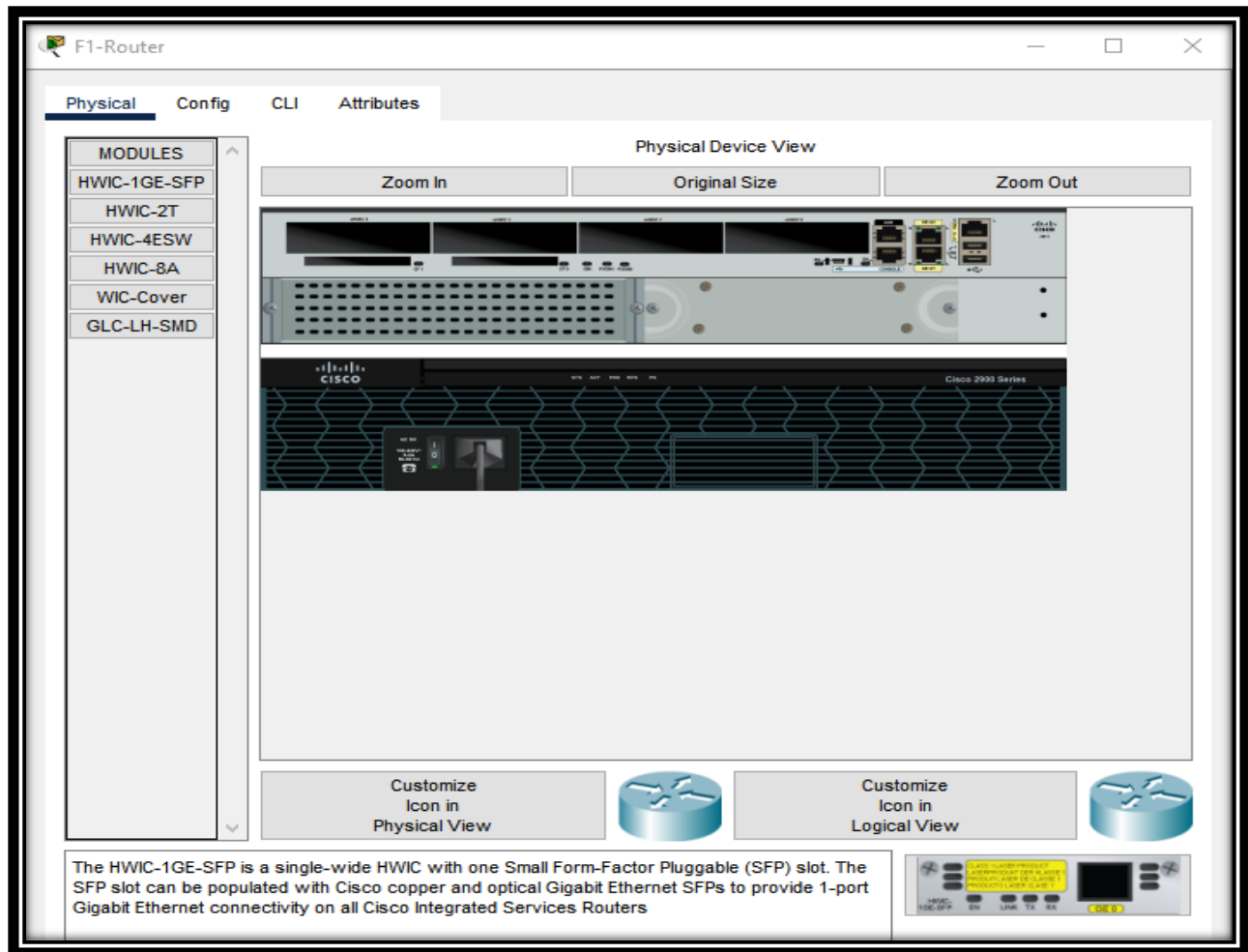
Designing an efficient and secure Airport Management System (AMS) on Cisco Packet Tracer involves the integration of various networking technologies to ensure seamless operations. The implementation encompasses the utilization of Open Shortest Path First (OSPF) protocol for dynamic routing, facilitating optimal data traffic within the airport network. Secure Shell (SSH) is employed for remote login, providing a robust and encrypted means of accessing network devices, enhancing overall system security. Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) services are integrated to automate IP address assignment and facilitate domain name resolution, streamlining network management. Virtual LANs (VLANs) are utilized to segment network traffic, ensuring efficient communication and enhancing security. Furthermore, port security is implemented to control access and mitigate unauthorized network access, contributing to overall network integrity. Additionally, the incorporation of wireless connections to the internet establishes seamless connectivity for both passengers and staff, enhancing the overall functionality of the Airport Management System. This comprehensive approach ensures a robust, secure, and well-managed airport network infrastructure within the simulated environment of Cisco Packet Tracer.

## NETWORK VIEW:



## Router F1:

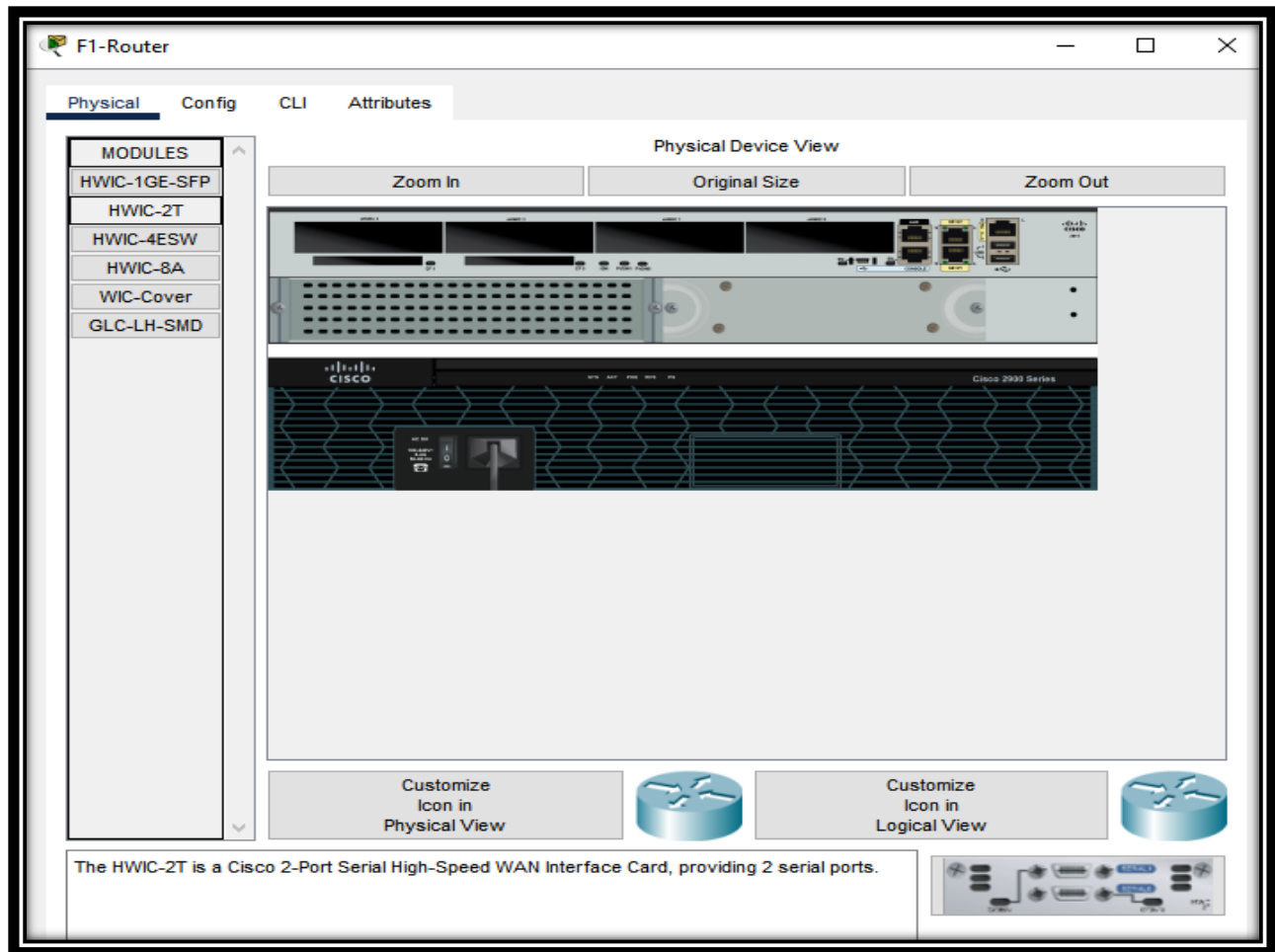
- Click on router



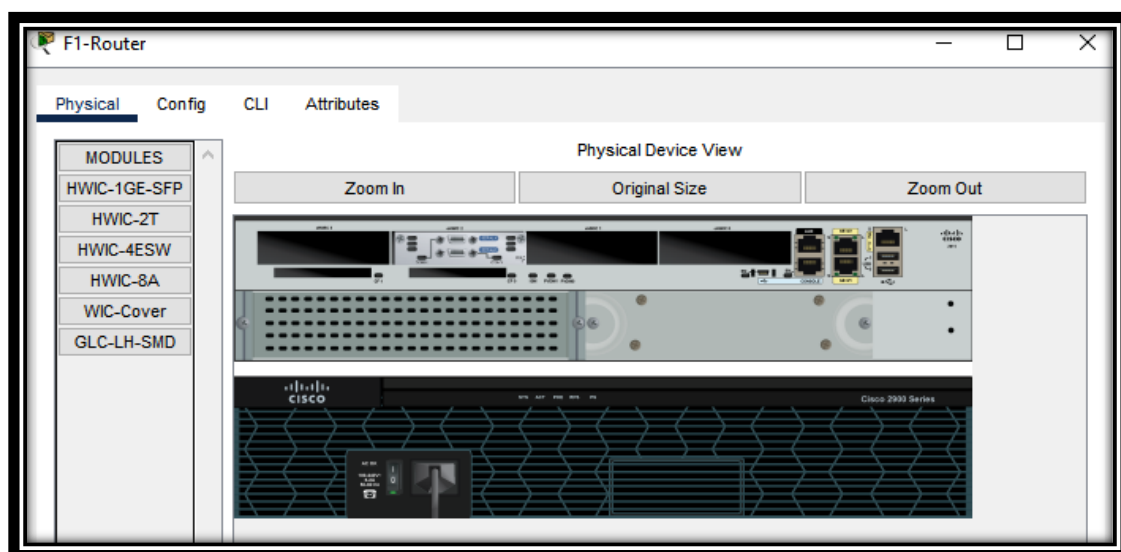
- Turn off the router by clicking on 0



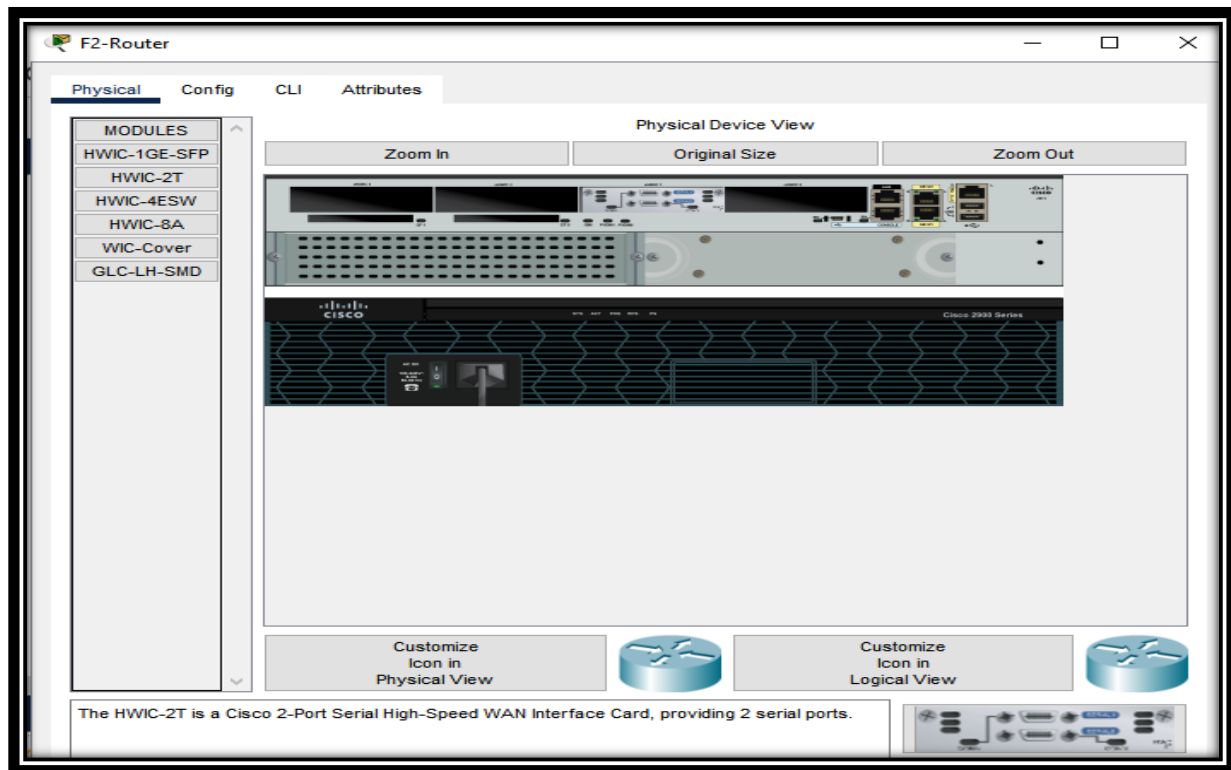
- By clicking on 0 green light will turn into white
- Now add Serial interfaces
- Come under the modules and choose HWIC-2T



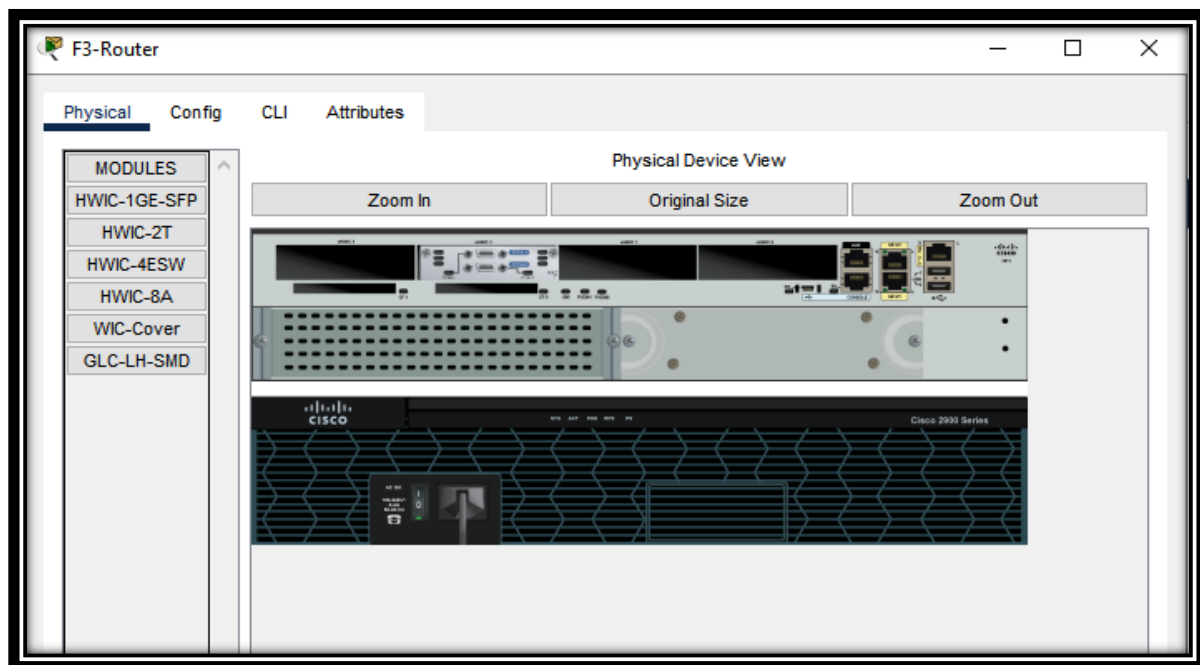
- Drag it to every node and click the router up



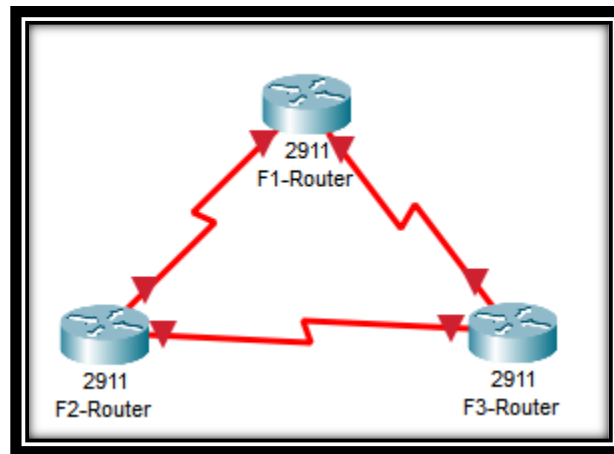
## F2-Router:



## F3-Router:



- Connect Routers by Serial DCE wires:



## OSPF ROUTING PROTOCOL:

### ROUTER F1:

```
F1-Router
Physical Config CLI Attributes
IOS Command Line Interface

--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se0/2/0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

Router(config-if)#int se
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up

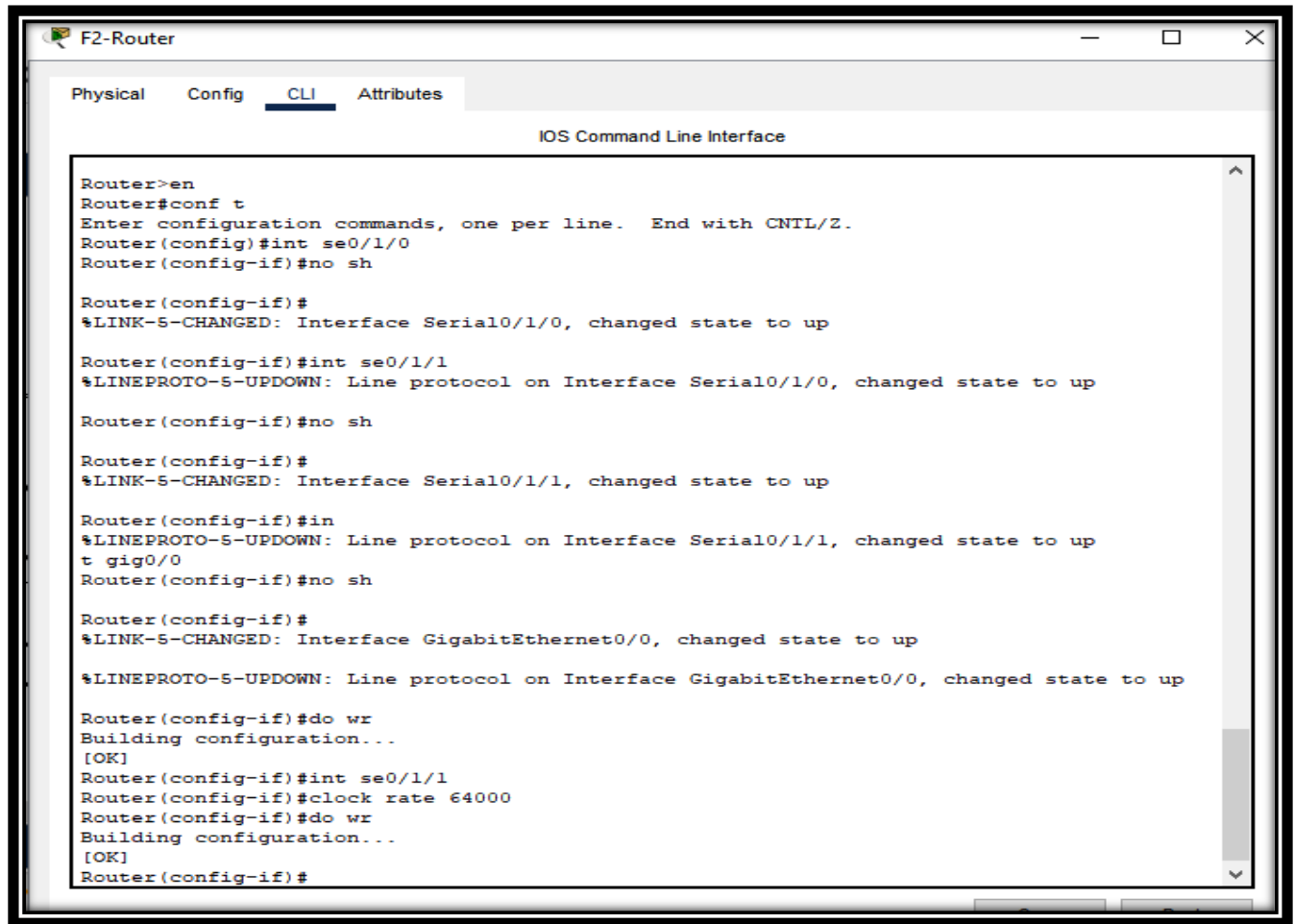
^
% Invalid input detected at '^' marker.

Router(config-if)#int se0/2/1
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/2/1, changed state to down
Router(config-if)#int gig0/0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
```

## ROUTER F2:



The screenshot shows a window titled "F2-Router" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and responses:

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int se0/1/0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

Router(config-if)#int se0/1/1
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

Router(config-if)#in
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
t gig0/0
Router(config-if)#no sh

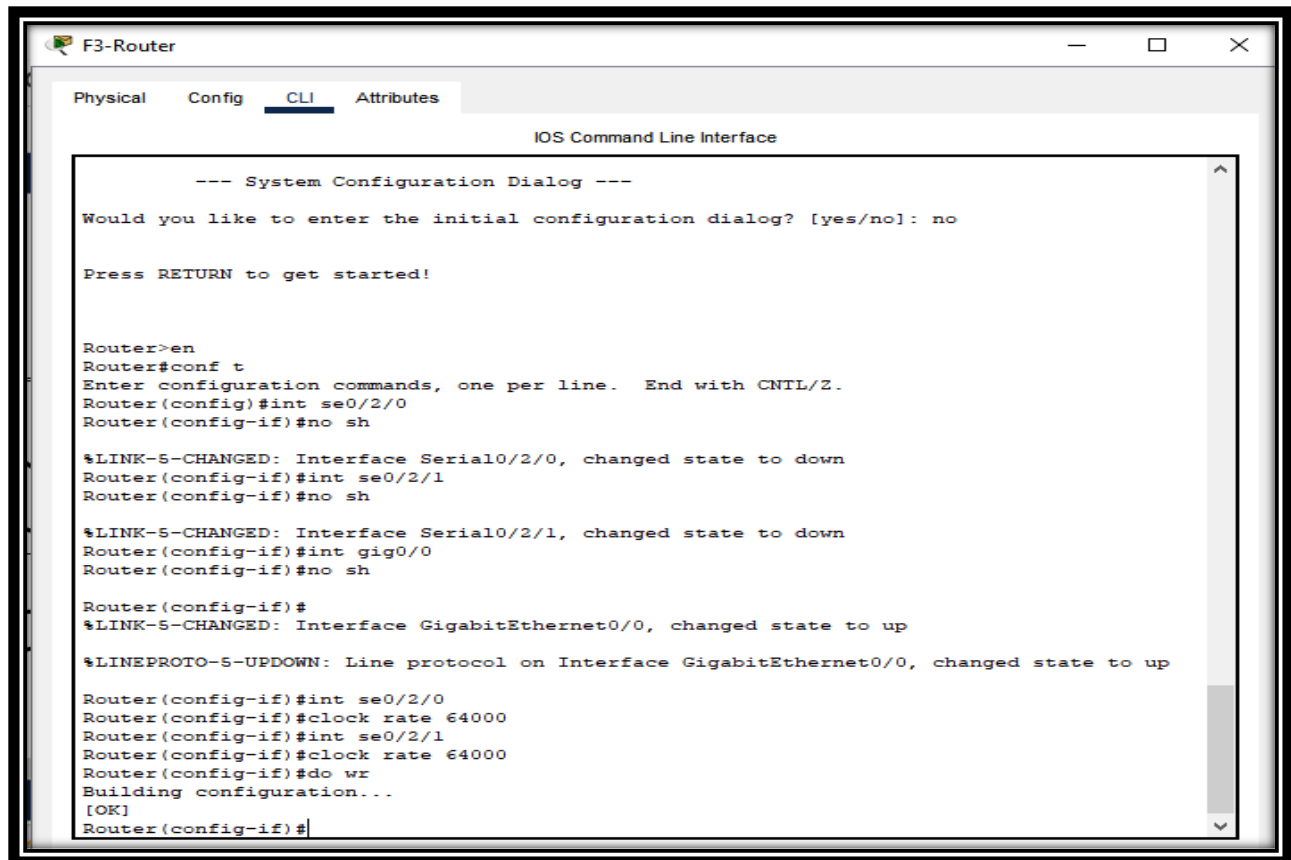
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#int se0/1/1
Router(config-if)#clock rate 64000
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

## ROUTER F3:

- Enabling clock rate:



The screenshot shows a window titled "F3-Router" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The interface shows a system configuration dialog asking if the user wants to enter the initial configuration. After pressing RETURN, the user enters "en" to enter enable mode, then "conf t" to enter configuration mode. They configure three interfaces: Serial0/2/0, Serial0/2/1, and GigabitEthernet0/0, all setting them to "no sh" (shutdown). The status of each interface is shown as "changed state to down". Then, they configure Serial0/2/0 and Serial0/2/1 with a clock rate of 64000. Finally, they enter "do wr" to save the configuration, which is confirmed as "Building configuration... [OK]".

```
F3-Router
Physical Config CLI Attributes
IOS Command Line Interface

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se0/2/0
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/2/0, changed state to down
Router(config-if)#int se0/2/1
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/2/1, changed state to down
Router(config-if)#int gig0/0
Router(config-if)#no sh

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#int se0/2/0
Router(config-if)#clock rate 64000
Router(config-if)#int se0/2/1
Router(config-if)#clock rate 64000
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

## Enabling VLANs:

### F1-Switch:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/2-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 80
% Access VLAN does not exist. Creating vlan 80
Switch(config-if-range)#int range fa0/4-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 70
% Access VLAN does not exist. Creating vlan 70
Switch(config-if-range)#int range fa0/6-8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 60
% Access VLAN does not exist. Creating vlan 60
Switch(config-if-range)#
```



```
Switch(config-if-range)#int range fa0/1
Switch(config-if-range)#switchport mode trunk

Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

## **F2-Switch:**

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/2-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 50
% Access VLAN does not exist. Creating vlan 50
Switch(config-if-range)#int range fa0/4-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 40
% Access VLAN does not exist. Creating vlan 40
Switch(config-if-range)#int range fa0/6-8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
% Access VLAN does not exist. Creating vlan 30
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

```
Building configuration...
[OK]
Switch(config-if-range)#int range fa0/1
Switch(config-if-range)#switchport mode trunk

Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

### **F3-Switch:**

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/2-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
% Access VLAN does not exist. Creating vlan 20
Switch(config-if-range)#int range fa0/4-6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
Switch(config-if-range)#int range fa0/1
Switch(config-if-range)#switchport mode trunk

Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

### **Routing Interface Protocol:**

### **F1-ROUTER:**

```
Router>EN
Router#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se0/2/0
Router(config-if)#ip address 10.10.10.5 255.255.255.252
Router(config-if)#
Router(config-if)#int se0/2/1
Router(config-if)#ip address 10.10.10.9 255.255.255.252
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

### **INTER VLAN DEFAULT GATEWAY CONFIGURATION:**

```

Router(config)#int gig0/0.80
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.80, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.80, changed state to up

Router(config-subif)#enc
% Incomplete command.
Router(config-subif)#encapsulation dot1Q 80
Router(config-subif)#ip address 192.168.8.1 255.255.255.0
Router(config-subif)#exit
Router(config)#
Router(config)#int gig0/0.70
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.70, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.70, changed state to up

Router(config-subif)#encapsulation dot1Q 70
Router(config-subif)#ip address 192.168.7.1 255.255.255.0
Router(config-subif)#exit
Router(config)#
Router(config)#int gig0/0.60
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.60, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.60, changed state to up

Router(config-subif)#encapsulation dot1Q 60
Router(config-subif)#ip address 192.168.6.1 255.255.255.0
Router(config-subif)#do wr
Building configuration...
[OK]
Router(config-subif)#exit

```

## **DHCP and DNS CONFIGURATION:**

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#serv
% Incomplete command.
Router(config)#service dhcp
Router(config)#ip dhcp pool RECEPTION
Router(dhcp-config)#network 192.168.8.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.8.1
Router(dhcp-config)#dns-server 192.168.8.1
Router(dhcp-config)#exit
Router(config)#

```

```

Router(config)#ip dhcp pool RETAIL
Router(dhcp-config)#network 192.168.7.0 255.255.255.0
Router(dhcp-config)#dns-server 192.168.7.1
Router(dhcp-config)#default-router 192.168.7.1
Router(dhcp-config)#exit
Router(config)#

```

```

Router1(config)#
Router1(config)#ip dhcp pool LOGISTICS
Router1(dhcp-config)#network 192.168.6.0 255.255.255.0
Router1(dhcp-config)#default-router 192.168.6.1
Router1(dhcp-config)#dns-server 192.168.6.1
Router1(dhcp-config)#exit
Router1(config)#
Router1(config)#do wr
Building configuration...
[OK]

```

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: 192.168.8.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.8.1

DNS Server: 192.168.8.1

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::250:FFF:FE29:3DEB

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MDS

Username:

Password:

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: 192.168.7.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.7.1

DNS Server: 192.168.7.1

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20A:41FF:FE83:4ACE

Default Gateway:

DNS Server:

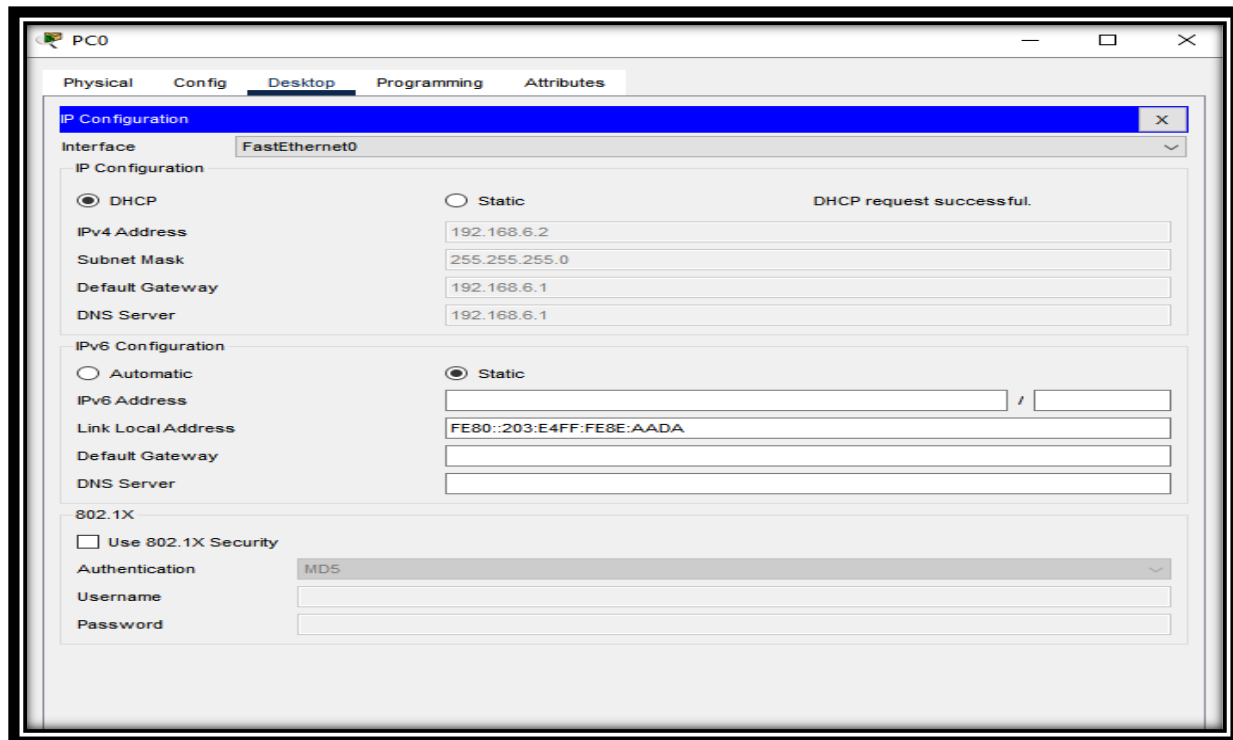
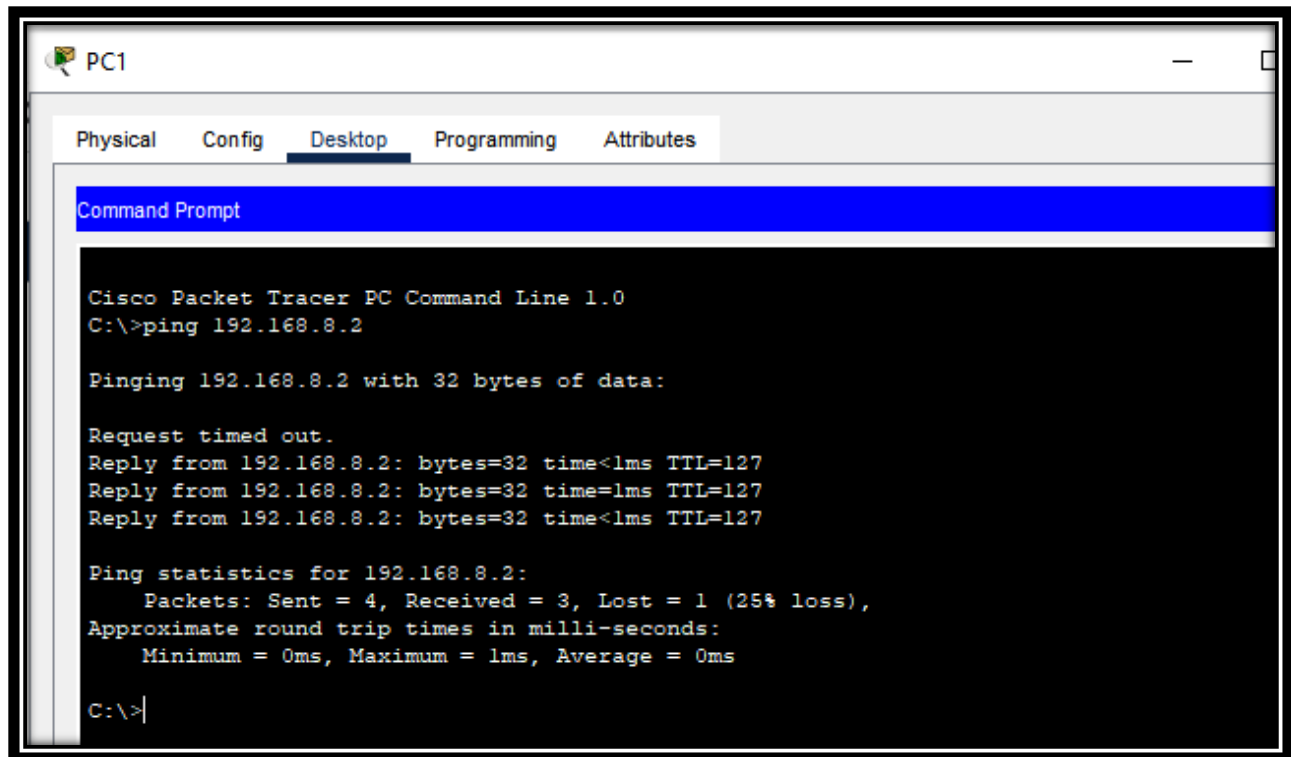
802.1X

☐ Use 802.1X Security

Authentication: MDS

Username:

Password:



**F2-ROUTER:**

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se0/1/0
Router(config-if)#ip address 10.10.10.1 255.255.255.252
Router(config-if)#int se0/1/1
Router(config-if)#ip address 10.10.10.10 255.255.255.252
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int gig0/0.30
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up

Router(config-subif)#encapsulation dot 1Q 10
^
% Invalid input detected at '^' marker.

Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#encapsulation dot1Q 30
Router(config-subif)#ip address 192.168.3.1 255.255.255.0
Router(config-subif)#exit
Router(config)#int gig0/0.40
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.40, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.40, changed state to up

Router(config-subif)#encapsulation dot1Q 40
Router(config-subif)#ip address 192.168.4.1 255.255.255.0
Router(config-subif)#exit
Router(config)#int gig0/0.50
```

```
Router(config)#int gig0/0.50
Router(config-subif)#encapsulation dot1Q 50
Router(config-subif)#ip address 192.168.5.1 255.255.255.0
Router(config-subif)#exit
Router(config)#
Router(config)#
Router(config)#do wr
Building configuration...
[OK]
```

## DHCP:

```
Router(config)#service dhcp
Router(config)#ip dhcp pool MARKETING
Router(dhcp-config)#network 192.168.5.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.5.1
Router(dhcp-config)#dns-server 192.168.5.1
Router(dhcp-config)#exit
Router(config)#
Router(config)#
Router(config)#
```

```
Router(config)#
Router(config)#ip dhcp pool HR
Router(dhcp-config)#network 192.168.4.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.4.1
Router(dhcp-config)#dns-server 192.168.4.1
Router(dhcp-config)#
Router(dhcp-config)#EXIT
Router(config)#DO WR
Building configuration...
[OK]
Router(config)#
```

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip dhcp pool FINANCE
Router(dhcp-config)#network 192.168.3.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.3.1
Router(dhcp-config)#dns-server 192.168.3.1
Router(dhcp-config)#
Router(dhcp-config)#EX
Router(config)#DO WR
Building configuration...
[OK]
```

PC5

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.3.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 192.168.3.1

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:96FF:FECA:A018

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

PC4

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.4.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.4.1

DNS Server 192.168.4.1

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:21FF:FED6:7837

Default Gateway

DNS Server

802.1X

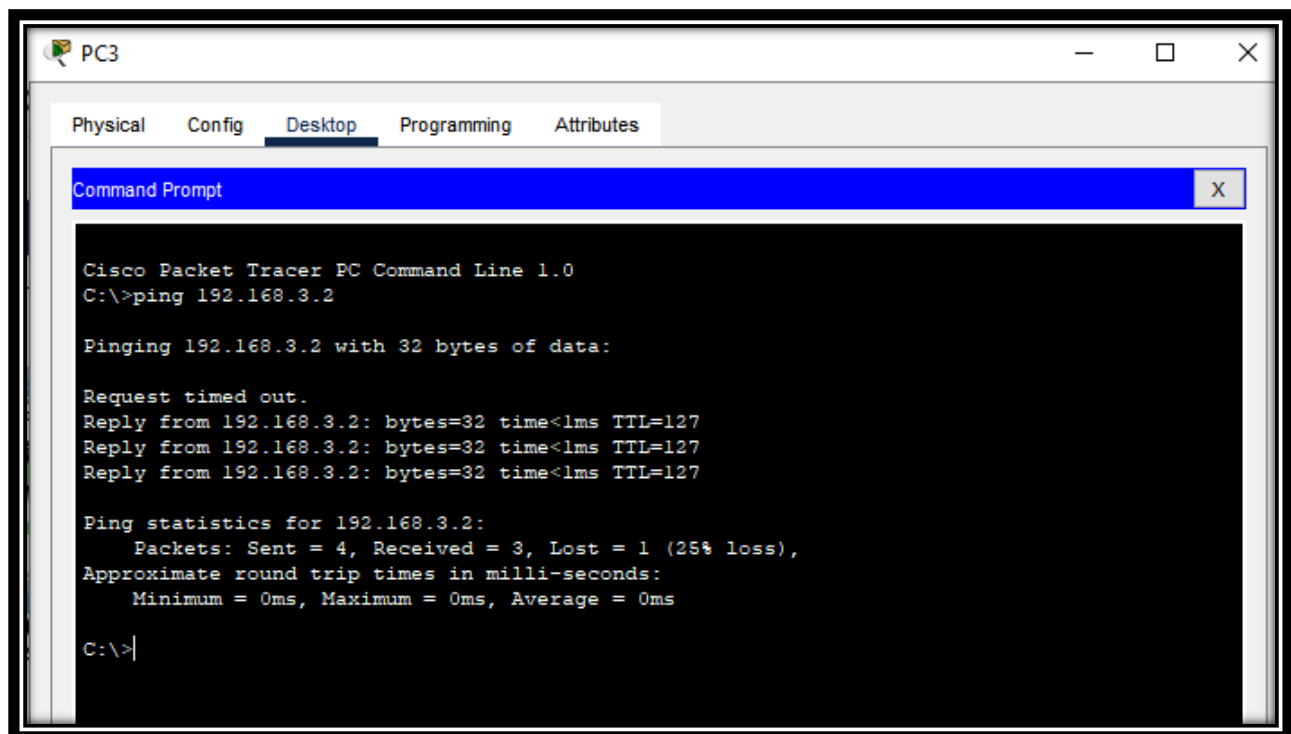
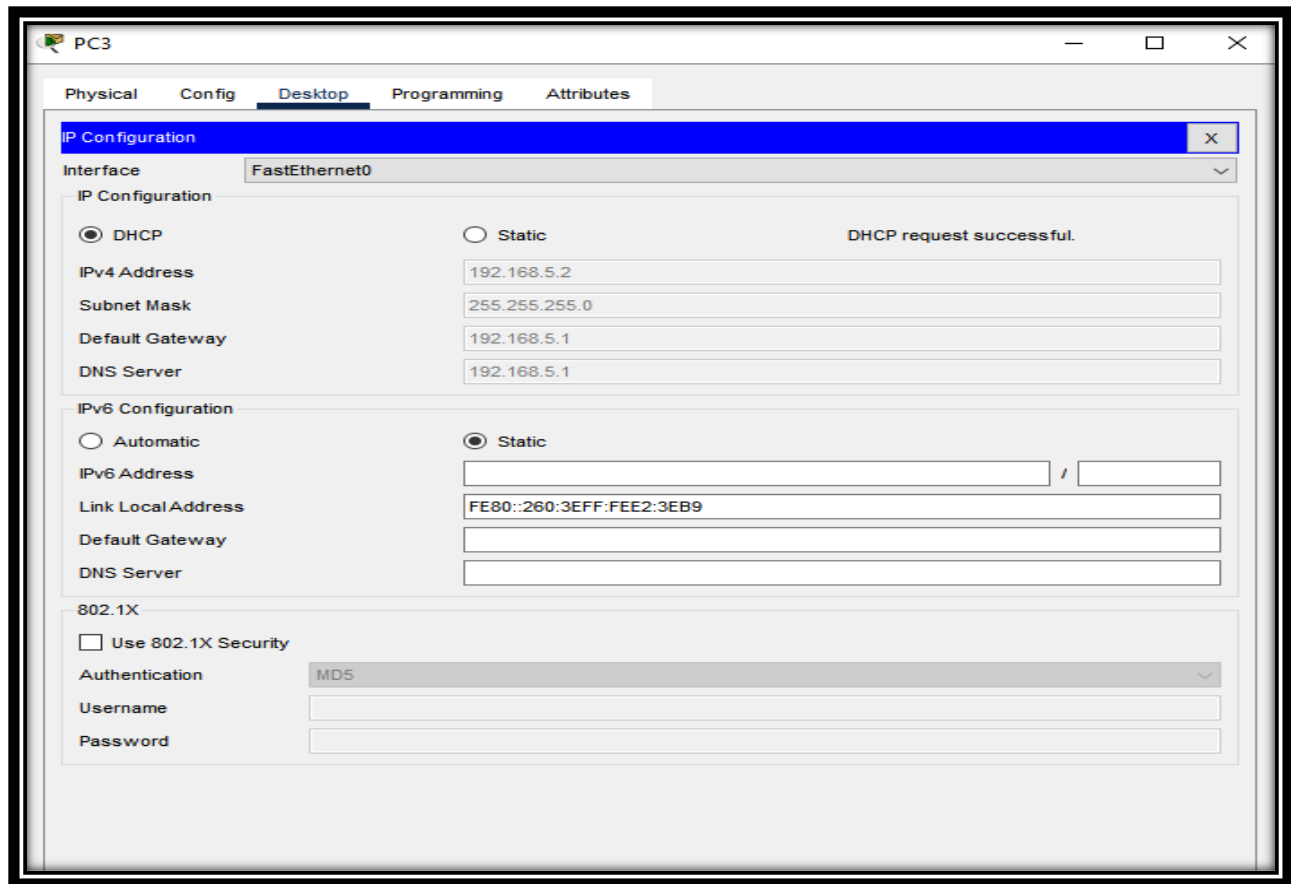
☐ Use 802.1X Security

Authentication MD5

Username

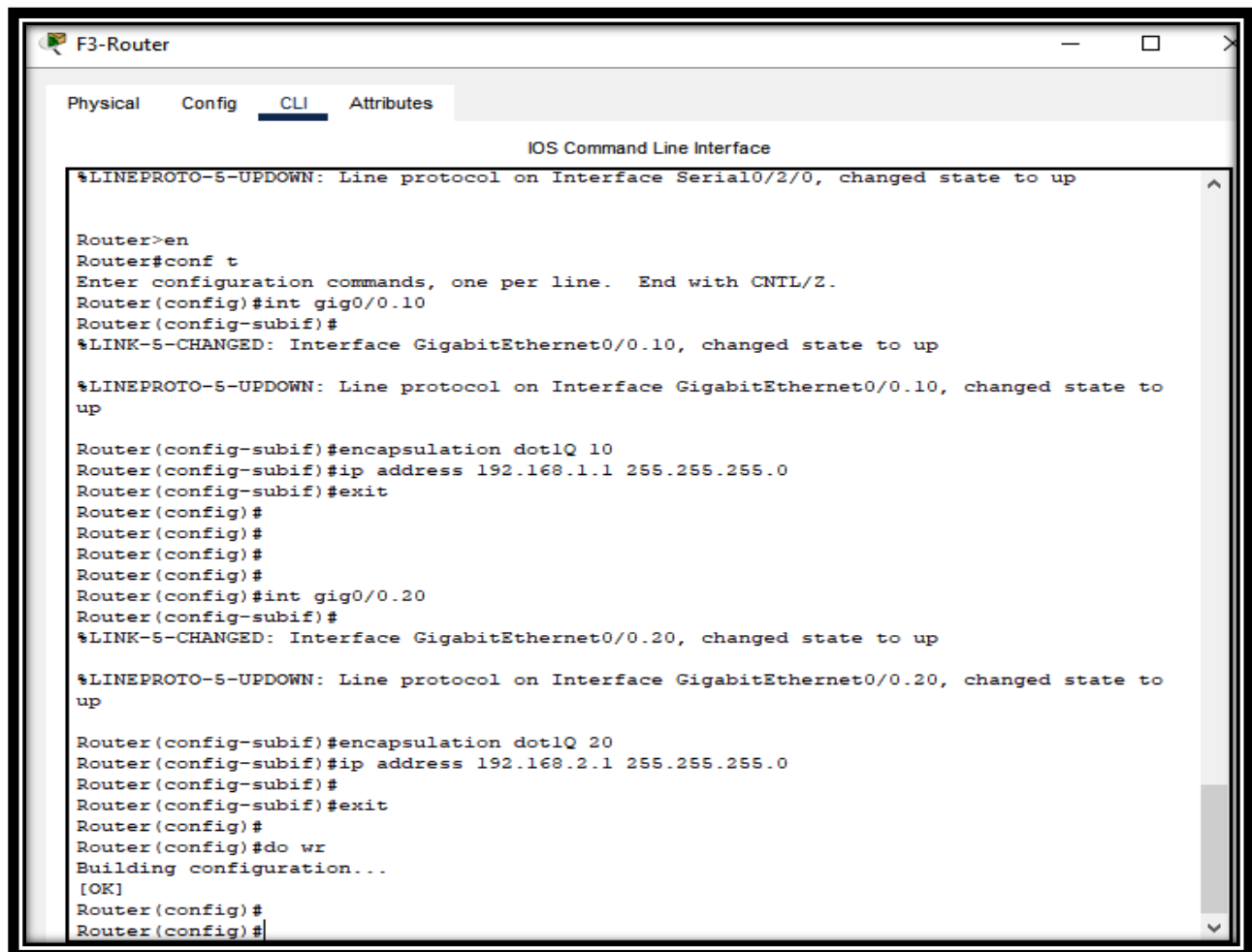
Password





## F3-ROUTER:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se0/2/0
Router(config-if)#ip address 10.10.10.6 255.255.255.252
Router(config-if)#int se0/2/1
Router(config-if)#ip address 10.10.10.2 255.255.255.252
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```



The screenshot shows a window titled "F3-Router" with four tabs: "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is selected, displaying the "IOS Command Line Interface". The interface shows a series of configuration commands and system messages. The commands include enabling configuration mode, configuring interfaces se0/2/0 and se0/2/1 with IP addresses, and writing the configuration. The system messages indicate that the line protocol on Serial0/2/0 has changed state to up, and the link state on GigabitEthernet0/0.10 and GigabitEthernet0/0.20 has changed state to up. The configuration process is completed with a "Building configuration..." message and a "[OK]" confirmation.

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int gig0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up

Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.1.1 255.255.255.0
Router(config-subif)#exit
Router(config)#
Router(config)#
Router(config)#
Router(config)#int gig0/0.20
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up

Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.2.1 255.255.255.0
Router(config-subif)#
Router(config-subif)#exit
Router(config)#
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Router(config)#
```

```
Router(config)#
Router(config)#service dhcp
Router(config)#ip dhcp pool IT
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.1
Router(dhcp-config)#dns-server 192.168.1.1
Router(dhcp-config)#exit
Router(config)#
```

```
Router(config)#
Router(config)#ip dhcp pool ADMIN
Router(dhcp-config)#network 192.168.2.0 255.255.255.0
Router(dhcp-config)#
Router(dhcp-config)#default-router 192.168.2.1
Router(dhcp-config)#dns-server 192.168.2.1
Router(dhcp-config)#exit
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Router(config)#
```

PC7

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 192.168.1.1

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::230:A3FF:FE96:4AE9

Default Gateway

DNS Server

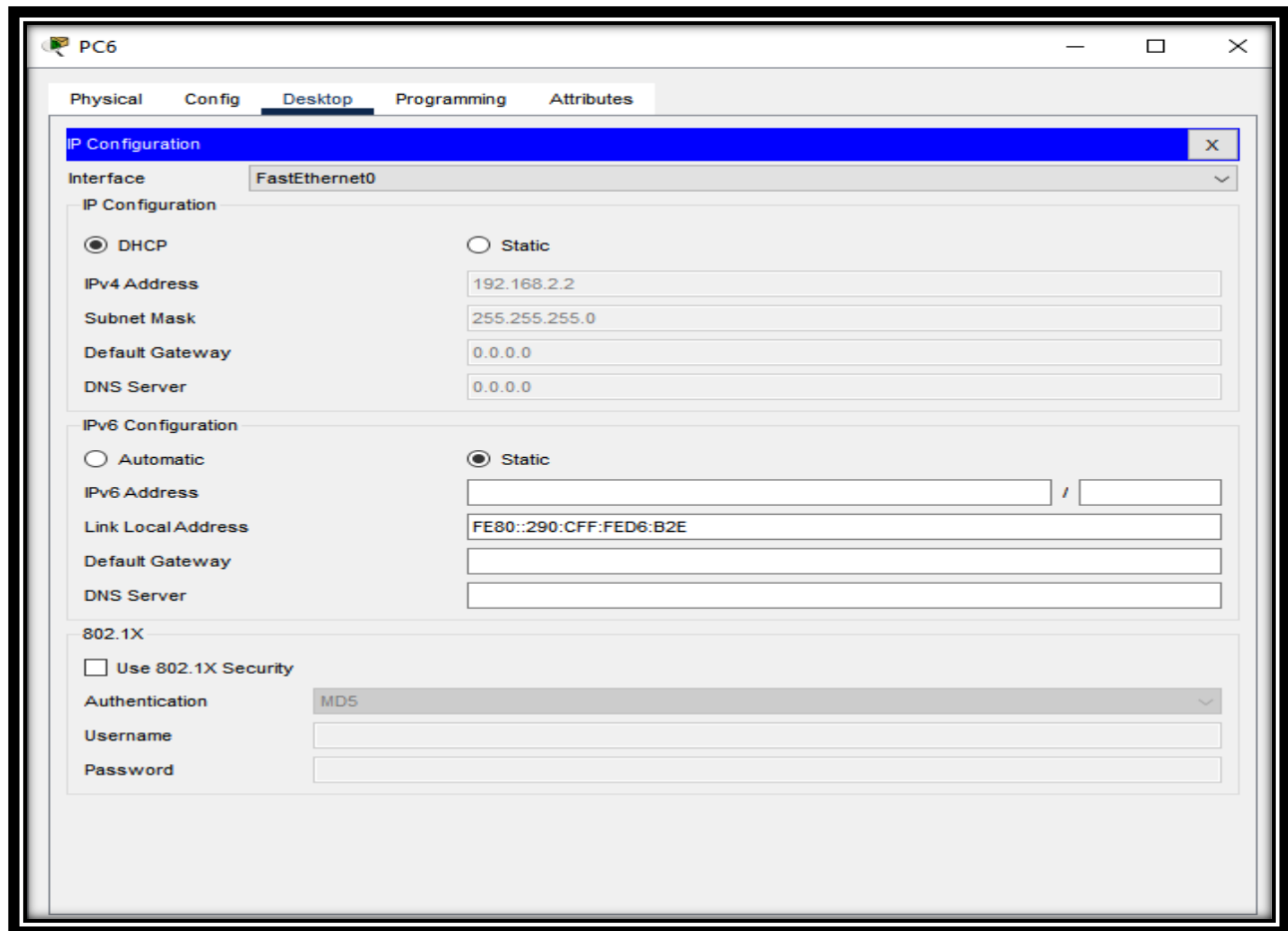
802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password



```
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=35ms TTL=128
Reply from 192.168.2.2: bytes=32 time=2ms TTL=128
Reply from 192.168.2.2: bytes=32 time<1ms TTL=128
Reply from 192.168.2.2: bytes=32 time=2ms TTL=128

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 35ms, Average = 9ms
```

## OSPF ROUTING PROTOCOL:

## Router 1:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 10
Router(config-router)#network 10.10.10.4 255.255.255.252 area 0
Router(config-router)#network 10.10.10.8 255.255.255.252 area 0
Router(config-router)#network 192.168.8.0 255.255.255.0 area 0
Router(config-router)#network 192.168.7.0 255.255.255.0 area 0
Router(config-router)#network 192.168.6.0 255.255.255.0 area 0
Router(config-router)#
Router(config-router)#do wr
Building configuration...
[OK]
Router(config-router)#
```

## Router 2:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 10
Router(config-router)#network 10.10.10.0 255.255.255.252 area 0
Router(config-router)#network 10.10.10.8 255.255.255.252 area 0
Router(config-router)#network 1
08:09:55: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.8.1 on Serial0/1/1 from LOADING to FULL, Loading Done
92.168.3.0 255.255.255.0 area 0
Router(config-router)#network 192.168.4.0 255.255.255.0 area 0
Router(config-router)#network 192.168.5.0 255.255.255.0 area 0
Router(config-router)#do wr
Building configuration...
[OK]
```

## Router 3:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 10
Router(config-router)#network 10.10.10.0 255.255.255.252 area 0
Router(config-router)#
08:15:28: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.5.1 on Serial0/2/1 from LOADING to FULL, Loading Done
network 10.10.10.4 255.255.255.252 area 0
Router(config-router)#do
08:15:52: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.8.1 on Serial0/2/0 from LOADING to FULL, Loading Done
wr
Building configuration...
[OK]
Router(config-router)#network 192.168.1.0 255.255.255.0 area 0
Router(config-router)#network 192.168.2.0 255.255.255.0 area 0
Router(config-router)#do wr
Building configuration...
[OK]
Router(config-router)#
```

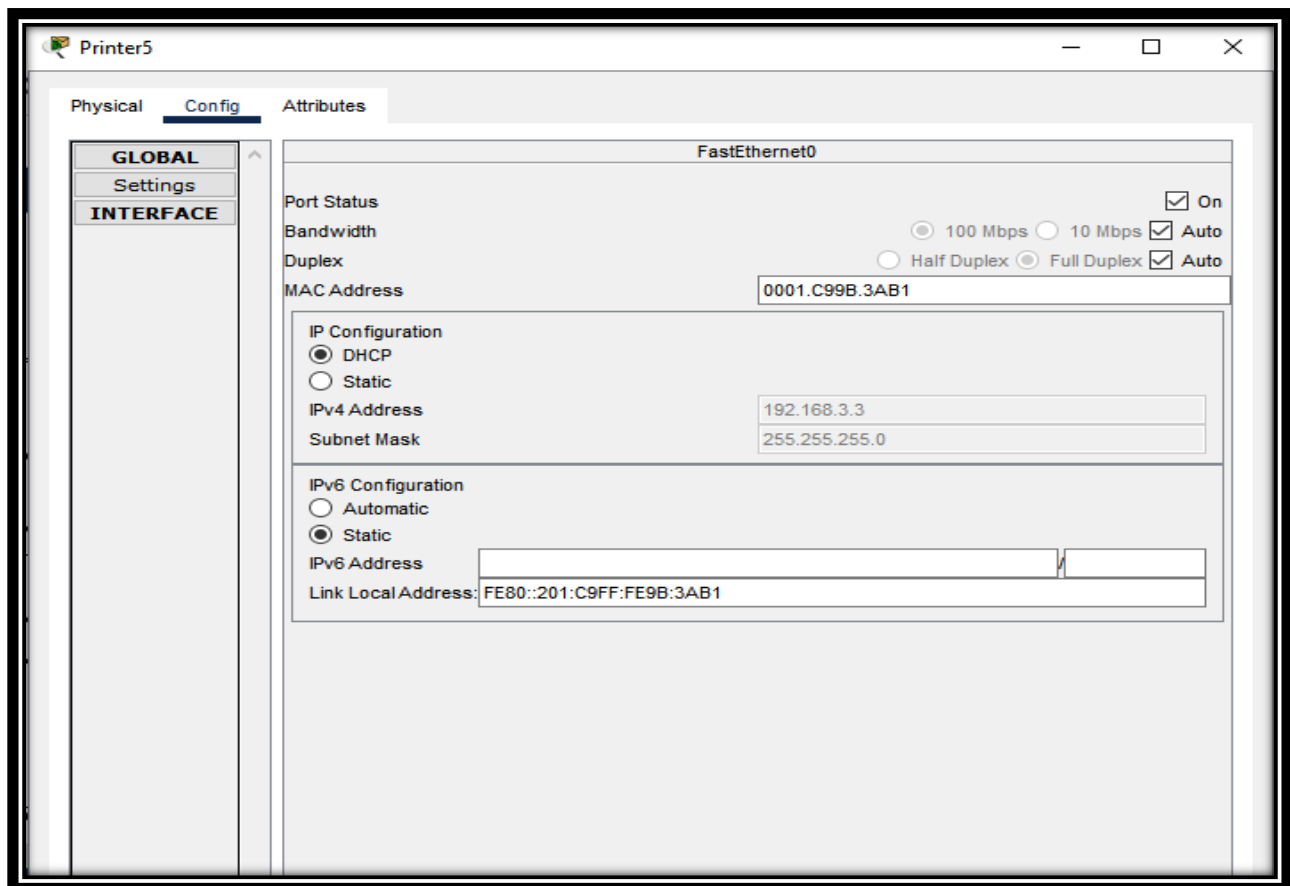
- Now ping pc7 to pc 0

```
Pinging 192.168.6.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.6.2: bytes=32 time=10ms TTL=126
Reply from 192.168.6.2: bytes=32 time=11ms TTL=126
Reply from 192.168.6.2: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.6.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 12ms, Average = 11ms
```

## Printer 5:



- Ping pc7 to printer 5:

```

C:\>ping 192.168.3.3

Pinging 192.168.3.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.3: bytes=32 time=11ms TTL=126
Reply from 192.168.3.3: bytes=32 time=11ms TTL=126
Reply from 192.168.3.3: bytes=32 time=1ms TTL=126

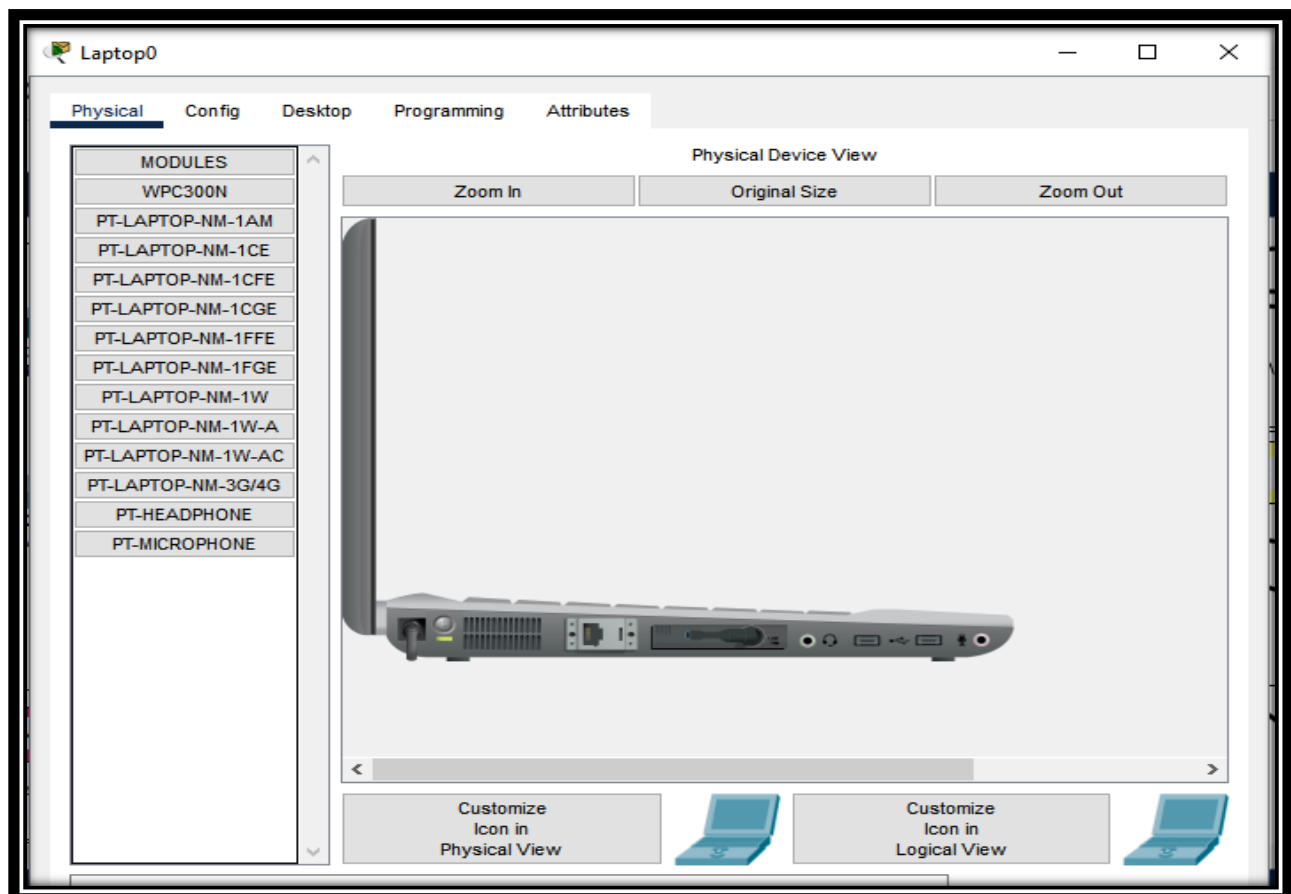
Ping statistics for 192.168.3.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 7ms

C:\>

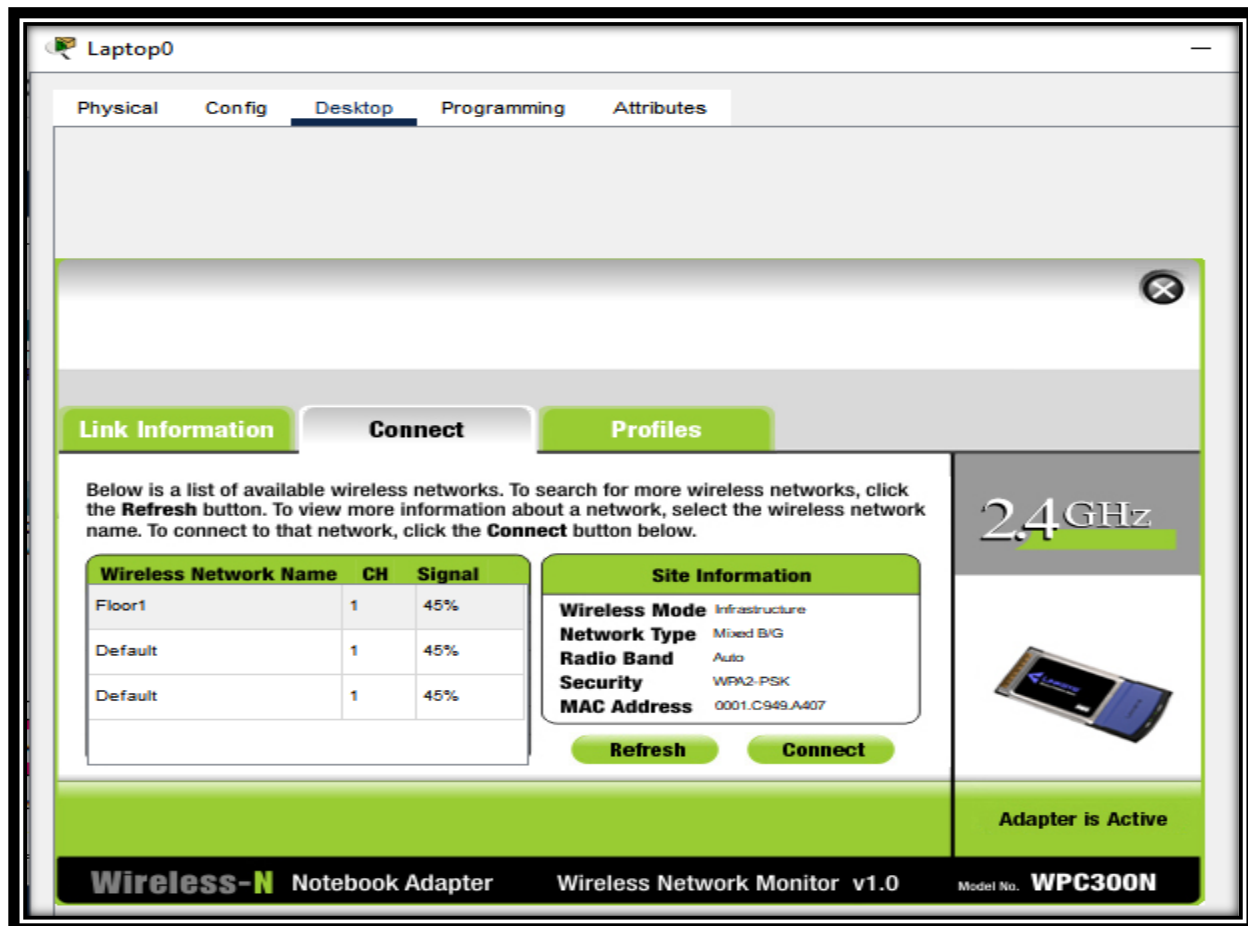
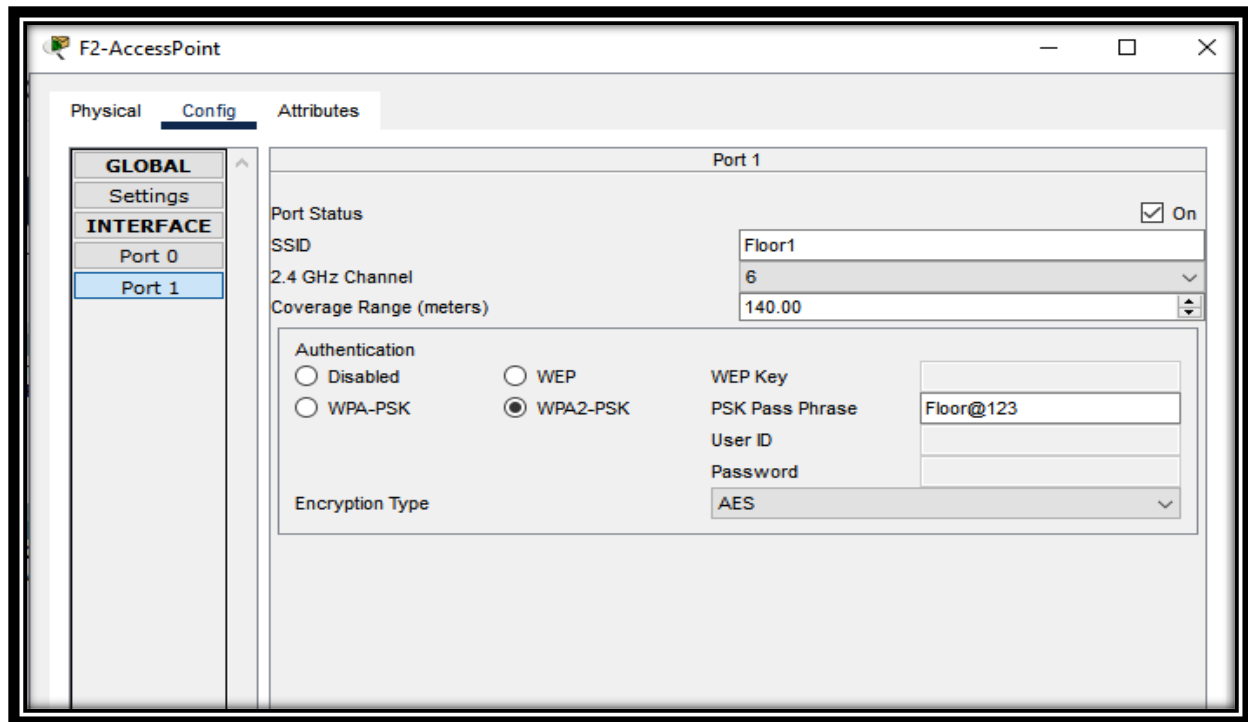
```

## Enable wifi connection:

- Replace the module of laptop to WPC300N



- F2-access point:





## WPA2-Personal Needed for Connection

This wireless network has WPA2-Personal enabled. To connect to this network, enter the required passphrase in the appropriate field below. Then click the **Connect** button.

Security

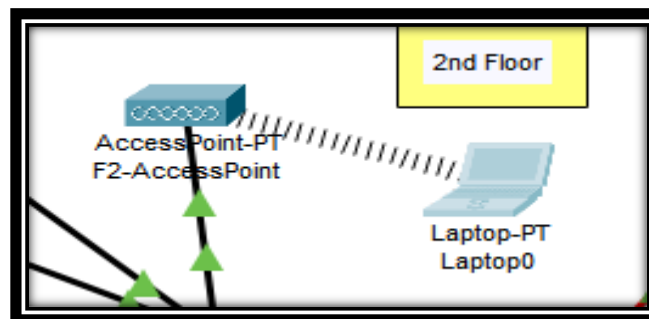
WPA2-Personal

Please select the wireless security method used by your existing wireless network.

Pre-shared Key

Floor@123

Please enter a Pre-shared Key that is 8 to 63 characters in length.



## Configure SSH:

### Router 1:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname F1-Router
F1-Router(config)#ip domain-name gtech
F1-Router(config)#username gtech password gtech
F1-Router(config)#crypto key generate rsa
The name for the keys will be: F1-Router.gtech
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

F1-Router(config)#line vty 0 15
*Mar 1 8:47:37.758: %SSH-5-ENABLED: SSH 1.99 has been enabled
F1-Router(config-line)#login local
F1-Router(config-line)#transport input ssh
F1-Router(config-line)#do wr
Building configuration...
[OK]
F1-Router(config-line)#exit
F1-Router(config)#
```

## Router 2:



The screenshot shows a window titled "F2-Router" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The text inside the terminal window is as follows:

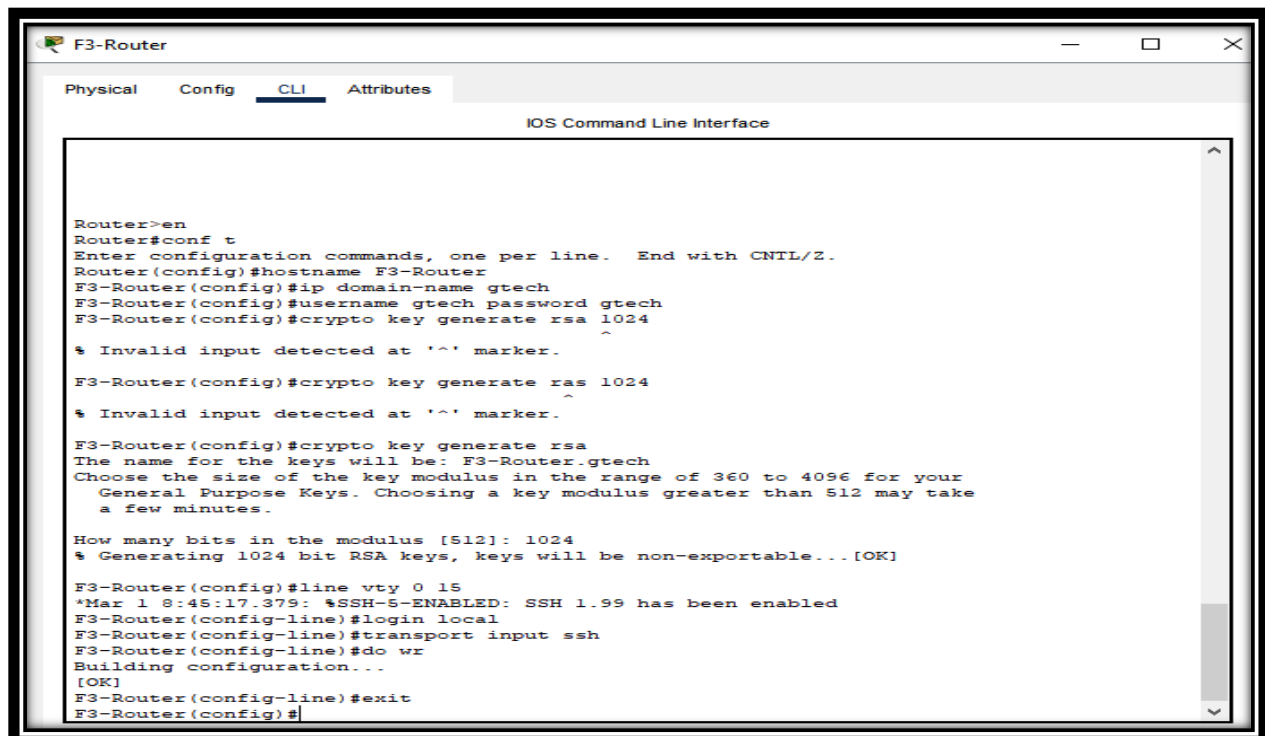
```
Press RETURN to get started.

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname F2-Router
F2-Router(config)#ip domain-name gtech
F2-Router(config)#username gtech password gtech
F2-Router(config)#crypto key generate rsa
The name for the keys will be: F2-Router.gtech
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

F2-Router(config)#line vty 0 15
*Mar 1 8:46:43.737: %SSH-5-ENABLED: SSH 1.99 has been enabled
F2-Router(config-line)#login local
F2-Router(config-line)#transport input ssh
F2-Router(config-line)#do wr
Building configuration...
[OK]
F2-Router(config-line)#
```

## Router 3:



The screenshot shows a window titled "F3-Router" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The text inside the terminal window is as follows:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname F3-Router
F3-Router(config)#ip domain-name gtech
F3-Router(config)#username gtech password gtech
F3-Router(config)#crypto key generate rsa 1024
^
% Invalid input detected at '^' marker.

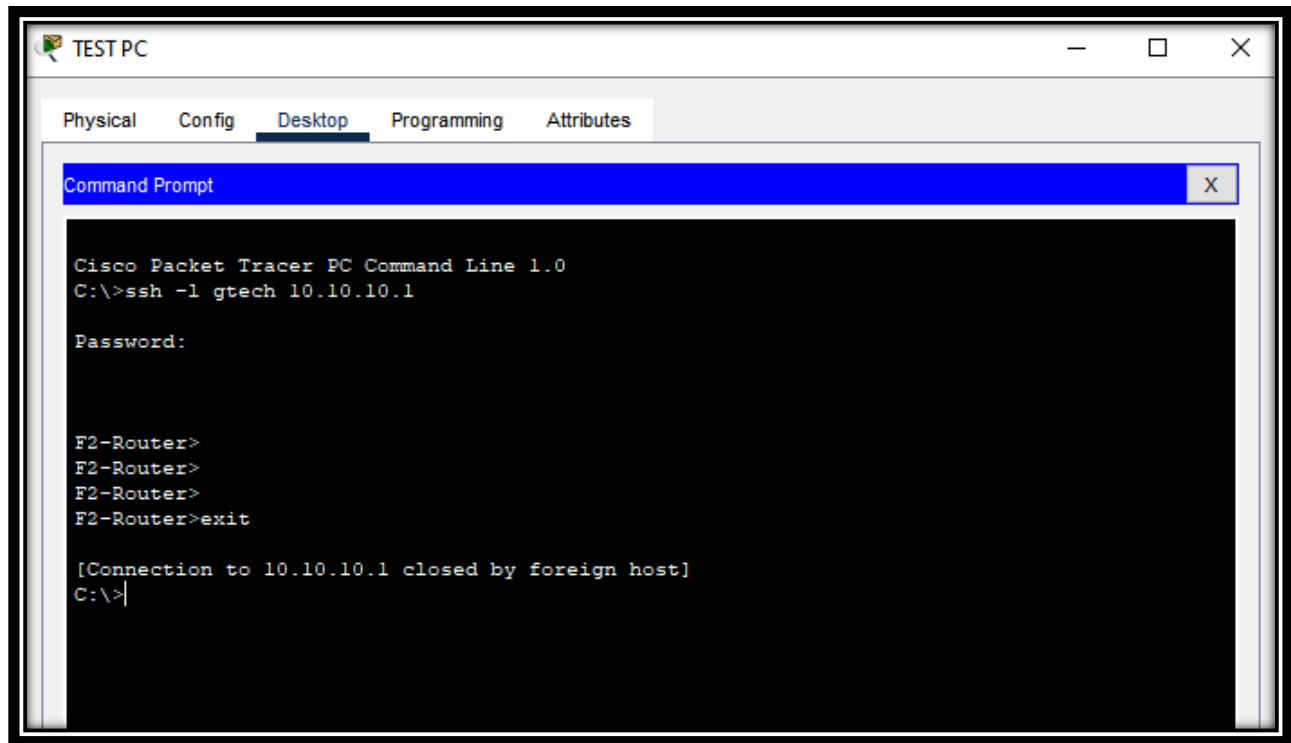
F3-Router(config)#crypto key generate ras 1024
^
% Invalid input detected at '^' marker.

F3-Router(config)#crypto key generate rsa
The name for the keys will be: F3-Router.gtech
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

F3-Router(config)#line vty 0 15
*Mar 1 8:45:17.379: %SSH-5-ENABLED: SSH 1.99 has been enabled
F3-Router(config-line)#login local
F3-Router(config-line)#transport input ssh
F3-Router(config-line)#do wr
Building configuration...
[OK]
F3-Router(config-line)#exit
F3-Router(config)#
```

## TEST REMOTE LOGIN:



## PORT SECURITY TO IT DEPARTMENT:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int fa0/2
Switch(config-if)#switchport port-security
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#switchport port-security violation ?
    protect    Security violation protect mode
    restrict   Security violation restrict mode
    shutdown   Security violation shutdown mode
Switch(config-if)#switchport port-security violation shutdown
Switch(config-if)#do wr
Building configuration...
[OK]
Switch(config-if)#|
```

```

Switch(config-if)#do sh start
Using 1430 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
    switchport mode trunk
!
interface FastEthernet0/2
    switchport access vlan 20
    switchport mode access
    switchport port-security
    switchport port-security mac-address sticky
!

```

```

Switch(config-if)#exit
Switch(config)#do sh port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
          (Count)          (Count)          (Count)
-----
          Fa0/2           1           0           0           Shutdown
-----
Switch(config)#

```

```

router ospf 10
log-adjacency-changes
network 10.10.10.4 0.0.0.3 area 0
network 10.10.10.8 0.0.0.3 area 0
network 192.168.8.0 0.0.0.255 area 0
network 192.168.7.0 0.0.0.255 area 0
network 192.168.6.0 0.0.0.255 area 0
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
    login local
    transport input ssh
line vty 5 15
    login local
    transport input ssh
!
!
!
end

F1-Router#
F1-Router#

```

## EMAIL CONFIGURATION ON 2ND FLOOR:

The screenshot shows the 'EMAIL SERVER' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing options for DHCP and Static IP. The Static IP is configured with the following values:

Field	Value
IPv4 Address	192.168.101.100
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

The screenshot shows the 'EMAIL SERVER' configuration window with the 'Services' tab selected. The 'EMAIL' section is active, showing options for SMTP and POP3 services. The 'Domain Name' is set to 'gmail.com'. The 'User Setup' section shows a list of users: marketing, hr, and finance.

**SERVICES**

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL**
- FTP
- IoT
- VM Management
- Radius EAP

**EMAIL**

SMTP Service: ☒ ON ☐ OFF

POP3 Service: ☒ ON ☐ OFF

Domain Name:

User Setup

User:  Password:

marketing  
hr  
finance

Setting email on every pc

PC5

PhysicalConfigDesktopProgrammingAttributes

Configure MailX

User Information

Your Name:

finance

Email Address

finance@gmail.com

Server Information

Incoming Mail Server

192.168.101.100

Outgoing Mail Server

192.168.101.100

Logon Information

User Name:

finanace

Password:

...

Save

Remove

Clear

Reset